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Decentralization for Increased Sustainability in Natural Resource Management? Two Cautionary Cases from Ghana

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Abstract: In Sub-Saharan African countries, governments are increasingly devolving natural resource management from central administration to the local government level as a trend toward subsidiarity. In parallel, efforts to implement formalization processes have resulted in a puzzling institutional arena, wherein mixed actors are struggling to influence the paths of institutional change and the associated distribution of land and land-related resources. Relying on political ecology and new institutionalism in social anthropology, we investigate how the decentralization of formalization of rights in artisanal and small-scale gold mining can lead to paradoxical outcomes, often negatively impacting social, economic, and environmental sustainability. Two comparative case studies are performed in Ghana. Our results show that the negative effects of formalization efforts for resource end users are to be understood in the broad context of actors' repositioning strategies following the selective implementation of decentralization. The authors conclude that increasing the power of the central government and line ministries to control local resources can influence the disenfranchisement of local people's participation and control of natural resources, resulting in a relentless environmental crisis.

Keywords: artisanal mining; conflict; decentralization; formalization; sustainability

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1. Introduction

The World Bank and other international donor communities have often supported decentralization of "natural resource management (NRM)" based on the assumption that it would bring governance down to local level actors and generate a range of positive outcomes, including ecological sustainability and poverty reduction [1–3]. However, research on decentralization mostly focuses on organizational issues and less on outputs and consequences in terms of sustainability [4]. In this paper, we investigate the mechanisms of formalization initiatives to show how the decentralization of the formalization of rights in "artisanal and small-scale gold mining (ASM)" can lead to paradoxical outcomes, often negatively impacting social, economic, and environmental sustainability.

In the last two decades, developing countries have been implementing new global trade rules and the formalization of rights to respond to the menace of informal ASM in resource management and use [5–7]. Even though the existing literature on the formalization of mining rights is extensive and focuses particularly on obtaining credit, some authors [6,7] have raised critical issues about the inadvertent consequences that can stem from such a drive. In particular, there is a growing critique that formalization can exacerbate inequities and heighten conflicts between local resource users and state regulators over unpaid fees and taxes [7,8]. There has also been a critique of formalization having a negative impact on peasants' livelihood and environmental quality [9]. These concerns have been driving forces behind international efforts to establish new rules, norms, and institutions governing responsible gold mining practices [5].

At the same time, Western private-sector organizations, such as RESOLVE and the Alliance for Responsible Mining, introduced the "Code of Risk mitigation for Artisanal and small-scale miners engaging in Formal Trade (CRAFT)" to improve the social, economic, and environmental performance, transparency, and market acceptability of the ASM sector and the traceability of artisanal gold [6–8]. However, formalization and CRAFT are contested in some jurisdictions, including Ghana, because sustainability improvement remains slow [7].

Relying on a new institutionalist approach and insights from political ecology, our research analyzes the effects of formalization measures as well as their institutional mechanisms in Ghana. We ask: how is it to be explained that, paradoxically, the decentralization of the formalization of rights in ASM has promoted informal ASM, often referred to as *galamsey*, in Ghana, leading to a negative impact on social, economic, and environmental sustainability? Which strategies do local resource users develop for and against informal ASM? We follow three lines of arguments: firstly, we demonstrate that the negative effects of formalization initiatives are to be understood in the broad context of actors' repositioning strategies, following the selective implementation of decentralization in Ghana. Secondly, we argue that the negative impact on social, economic, and environmental sustainability of formalization initiatives might result from some of the inherent characteristics of the CRAFT. Thirdly, we illustrate that the consequences of formalization initiatives will force local resource users to switch to more marginal resources, which are then overexploited and further threaten resource sustainability.

Ghana makes an interesting case study to critically analyze the intertwined relationship among decentralization policy, mining title formalization, and CRAFT because of the prominent role that they play in current NRM practices. Like many Sub-Saharan African countries, the exploitation of gold ore in Ghana is shaped by three main sources of formal rules, including public policies, mining concession, and customary law. Customary law governs surface land rights while statutory laws and regulations govern subterranean mineral resources, leading to a situation where gold ore mining is the result of the interactions of customary law and government laws and regulations. This affects the governance and coordination of mineral wealth exploitation, which can positively or negatively affect resource sustainability [10–13].

The following section presents the contradictory incentives resulting from the dual existence of so-called customary laws and government laws and regulations in NRM. Section 3 provides the materials and methods. In Section 4, we explore decentralized NRM through the lens of two case studies in Ghana. Section 5 presents the main empirical findings. In Section 6, we discuss our study hypotheses, and we provide a conclusion in Section 7.

2. Theoretical Framework, Contextual Factors, and Working Hypotheses

2.1. Aligning the New Institutionalist and Political Ecology Perspectives

We rely on political ecology [14] and components of the new institutionalism in social anthropology [12,15,16] as a heuristic and conceptual approach to analyze redistribution processes associated with decentralization of NRM and the consequences on social, economic, and environmental sustainability. In the context of legal pluralism and the acknowledgement of different actors' powers and interests in NRM in Ghana, bringing together the two approaches is apt in the sense that the New Institutionalism defines concepts of the interrelations of factors leading to institutional changes and describes the use and overuse of surface and underground resources, while political ecology brings in a concrete analysis of power held by local power-holding actors, state agencies, and multinational entities.

Institutions—"the rules of the game"—regulating resource management and use constantly arise in a given historical, political-legal, and socioeconomic context, which is shaped by power relations that political ecology focuses on describing [17]. To this end, new institutionalism in social anthropology [15,16] shows how internal and external market

forces and the dynamics of the resource context for ASM lead to rationale strategies and forum/institution shopping (selection of customary and statutory rules and regulations) by actors competing for access to land for mining and the arrangement that distributes resources unevenly. This variant will direct our analysis on how decentralization in NRM phases out or diminishes constraints (high transaction costs) and enhances resource users' incentives to access and invest in land and land-related resources. It will add to our understanding of how mining rights can be structured to avert externalities to resource owners and the society at large.

Political ecology [14] offers a concrete analysis of power relations and focuses on who receives what and when and the corresponding winners and losers. The perspective will help us understand the "agency of social groups in the redistribution processes occurring in decentralization of NRM" by examining the narratives "including materialist aspects (price of input, market selection, struggle for survival)" and counter-narratives "including idealist aspects (beliefs, framing struggles, networks)" [18,19] and how unequal relations of power create a situational rationality that forces local resource users to destroy their environment.

2.2. The Main Mining Regulation Efforts since Colonial Era

Since the British colonial administration in Ghana, minerals and mining legislations have been initiated by successive governments to enable actors to gain, control, and maintain access to resources and ensure responsible mining. In Northern Ghana, the colonial administration enacted the Mineral Rights Ordinance, which vested all mineral rights in the British crown [20]. The ordinance empowered the governor to restrict local chiefs from granting concessions, regulate the use of mercury in gold mining, and constrict the mining rights of Indigenes. The exclusionary measures marked the beginning of informal ASM, which became a major threat to European mining concessions, rural inhabitants, and the ecosystem of local communities.

Soon after Ghana's independence in 1957, several laws and regulations were enacted to consolidate state control of mineral wealth [5,20]. Article 257(6) of the 1992 Constitution upheld that "every mineral in its natural state . . . is the property of the Republic of Ghana and shall be vested in the President on behalf of, and in trust for the people of Ghana". Therefore, the state is the ultimate owner of mineral resource wealth and shall be in full control and supervision of the exploitation, development, processing, and utilization of any mineral in water and above and under any land surface thereof. The Ghanaian President can vest authority in the appointed Minister of Lands and Natural Resources to administer and dispose of the state's mineral resource reserves.

Following Ghana's economic stagnation in 1970–1980, the World Bank and the International Monetary Fund introduced the "structural adjustment program (SAP)" to revive the mining sector. Subsequently, the Minerals and Mining Law of 1986 was enacted, which provided mine incentives to attract foreign mining investors to Ghana. The law criminalized ASM and provided multinational corporations an avenue to exploit vulnerable communities and pushed local citizens to shift to marginal and progressively diminishing parcels of land for their livelihood.

In 1989, three additional legislations were enacted: the Mercury law—"Provisional National Defence Council Law (PNDCL)" 217—regulates the use of mercury in gold mining, the "Precious Minerals Marketing Corporation (PMMC)" law (PNDCL 219) provides official marketing channels for gold produced by miners in Ghana, and the Small-Scale Gold Mining law (PNDCL 218) was the first attempt to introduce a license system and district assistance centers to regulate ASM. In 2006, the Minerals and Mining Act (Act 703) was passed to enhance tenure security and eliminate barriers to improve sustainability. Section 83(a) emphasizes that only adult Ghanaians (18 years and above) can be granted a license for ASM operations. Additionally, Act 703 recognizes the role foreign mining companies can play in the area of mine support services to concession holders.

Under Act 703, artisanal and small-scale miners can apply for a concession of 25 acres (10 hectares) of land in designated areas of a district through the "Minerals Commission

(MC)". Current estimates are that less than 30% of artisanal and small-scale miners have a license [21]. The large majority who remain informal draw on the customary institutional framework to legitimize their claim to land and related resources, which results in conflicts between them and concession holders. In this context, mining rights and access are about relations among social actors involving benefits or values, including appropriation, accumulation, transfer, and distribution. In the past 15 years, efforts to consolidate decentralization have increased to improve the access and control of ASM in Ghana.

2.3. Decentralization Efforts in Ghana

In Ghana, the move towards decentralization involved efforts to shift control over NRM to a range of local government actors [2,4]. The changes in rights and powers in NRM are supported by the argument that there will be an increase in local control over resources—whether in the hands of user groups or Indigenous communities—and is therefore a good thing [22]. For example, in Ghana's forest management strategy, the central government backs user groups over elected local governments to govern forest reserves, thus empowering traditional nondemocratic authorities over forests [23].

In the late 1980s, the PNDCL 207 was enacted to grant local government—"Metropolitan, Municipal, District Assemblies (MMDAs)"—significant discretion over mediation in disputes as well as the right to issue business permits to owners of processing facilities, to enforce environmental laws, and to stipulate that any project or program that may cause air, soil, and water pollution; resource depletion; climate change; or the loss of biodiversity requires the approval of the affected MMDAs [4]. In addition, the MMDAs are entitled to a share of the resource revenues, royalties, and ground rents from activities involving the development of mineral resources within their territorial jurisdiction. Moreover, the PNDCL 207 grants control over small-scale gold mining in the MMDAs.

In response to the growing grievances of informal ASM in the early 1990s, the MMDAs established checkpoints to collect tax revenues to address the environmental crisis resulting from ASM. This strategy was short lived as the national government enacted Act 490 to grant the "Environmental Protection Agency (EPA)" the power to issue environmental permits to any project likely to have a potentially adverse impact on the environment. The EPA appears to promote this specific policy measure in favor of an eco-rent development interest to reinforce their own benefits. While the EPA short-term profit maximization objectives take the upper hand, environmental degradation continues to increase. Comparing the 1990s to today, environmental degradation and water pollution have worsened in an unprecedented manner, which raises concerns about sustainability challenges.

2.4. Sustainability Challenges in Ghana

Sustainability in this context refers to the adoption of practices in the mining operations stage that results in environmental and social advancement with the aim of diminishing negative impact, while maintaining the health and safety of mine workers, the interests of diverse stakeholders, and the affected communities, in order not to endanger the potential needs of future generation [24]. Since the 1987 Brundtland Commission, the 1992 Rio Earth Summit, and the 2030 Agenda on Sustainable Development, the government of Ghana has taken initiatives in response to the grievances in the extractive sector that are being described as antithetical to sustainability to make communities inclusive, safe, and resilient.

Apart from the government's environmental laws and the formalization of mining rights, other international socioecological labelling and certification organizations introduced initiatives to promote equitable and sustainable exploitation of mineral resource wealth [6,7]. One of such initiative is CRAFT, which facilitates engagement between downstream supply chain actors and upstream ASM producers to source gold in conformance with the Organization for Economic Cooperation and Development Due Diligence Guideline. CRAFT enables ASM producers to participate in international markets since many gold buyers in the global North and environmental activists have associated responsible gold mining practices with healthiness and environmental sustainability [6].

However, in recent years, Ghana's mining sector faces difficult sustainability challenges because of the growing social and environmental grievances, human rights abuses, and lack of health and safety measures in mines. Studies [25,26] of mining operations in Ghana showed that the forest cover (~2.51 million hectares) and green vegetation have been removed due to open pit mining activities, which imperils the surface land to water erosion, resulting in loss of nutrient-rich topsoil. With this background in mind, we formulate two broad working hypotheses that will not be tested statistically but will provide guidance for our data collection and discussion to answer the research questions.

2.5. Working Hypotheses

The H1 presents how the decentralization process is envisaged to work according to its proponents. The H2 builds on insights from political ecology and new institutional economics to politicize the redistribution of use rights to resources resulting from decentralization efforts. H2 therefore focuses on actors' strategies and power games in decentralization.

Hypothesis 1 (H1). *Decentralization in NRM will lead to positive social and environmental outcomes. As decentralization empowers Indigenous and local communities through a more direct involvement in NRM, local citizens are incentivized to create and implement transparent social and environmental standards themselves—devoid of external influence—and perform downward accountability, leading to sustainability and equity in benefit sharing.*

Considering that actors do not stand idly by while mining procedures are being decentralized, we expect that H1 might not fully capture the processes at play.

Hypothesis 2 (H2). *Together with CRAFT, the decentralization of procedures in ASM leads to different actors repositioning their strategies to promote their interests and increase their bargaining power, which ultimately leads to a negative impact on social, economic, and environmental sustainability. This is to be explained by the following mechanisms:*

1. Central government actors will not let their responsibilities go to local people. As national authorities have agency, they will reinforce a neopatrimonial political culture to take advantage of public positions for private gains. This takes the form of noninterference where informal activities are tolerated, leading to resource over exploitation and environmental crises.
2. Decentralization in NRM enables newcomers to gain access to local resources, leading to conflicts between newcomers and locals. As newcomers usually have exclusive rights to land and related resources guaranteed by the state due to their financial and political capital, they will enclose "common pool resources (CPR)"—i.e., resources (e.g., irrigation water, pastures) whose uses are competitive and whose characteristics make it difficult to prevent newcomers from using them. This will compel the excluded locals to shift to more marginal land resources, which are then overexploited to make income. Under these circumstances, anger will set in among locals who are willing to fight newcomers over CPR that are becoming increasingly scarcer.
3. The neoliberal nature of CRAFT may lead to unwanted outcomes. As CRAFT enables resource exploiters to participate in international markets, local structures and organizations that regulate internal markets are bypassed, resulting in revenue loss and thereby endangering state land reclamation activities.

3. Materials and Methods

3.1. Study Design

We rely on a comparative case study strategy to gather the empirical materials to discuss our research hypotheses [27]. The strategy can help us to interrogate the differences, but also the similarities, of whether the policy tools to address sustainability in ASM are appropriate.

3.2. Case Selection

For comparative analysis, we selected cases from *Bole* (Figure 1) and *Talensi* (Figure 2), which constitute two different administrative regions in Ghana. In both of these case study areas, informal ASM are managed de facto by customary systems that operate in parallel to government laws. Customary systems themselves differ substantially, in the extent to which traditional beliefs, norms, and values govern resource use, and regarding the role and legitimacy of customary authorities: the *Bole* case in the Savannah Region is characterized by a hierarchical and nondemocratic customary system with allodial titles vested in customary chiefs through a formal recognition of the "Customary Land Secretariat (CLS)". The CLS is a local or traditional land governance structure established by stool, skin, clan, or family that owns land within the MMDAs with the technical support of the regional "Lands Commission (LC)" and district "Office of the Administrator of Stool Lands (OASL)". Stool or skin describes the symbol of authority of customary chiefs. Any authority responsible for the management of stool, skin, clan, and family land is a fiduciary mandated with the obligation to discharge customary land management functions for the benefit of the subjects of the stool, skin, clan, or family and must be accountable as such. The CLS is responsible for maintaining accurate records of land transactions and facilitates the settlement of land disputes through alternative dispute resolution. The MMDAs Stool Lands Officer is to ensure that the CLS complies with its mandate, including the submission of land transaction records to the LC and OASL at the end of every half year.

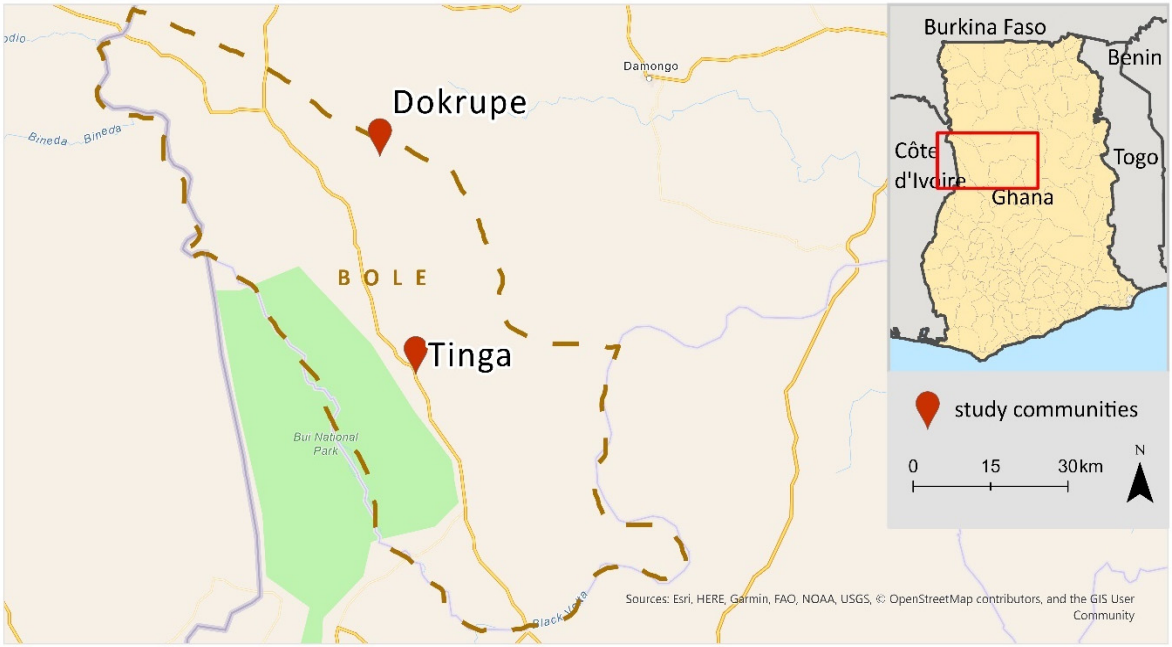

Figure 1. Location of study communities in the administrative map of *Bole*. The population of *Dokrupe* is 2096 and of *Tinga* is 2948. Acute water shortage, land degradation, deforestation, and informal ASM are major challenges local communities face [20].

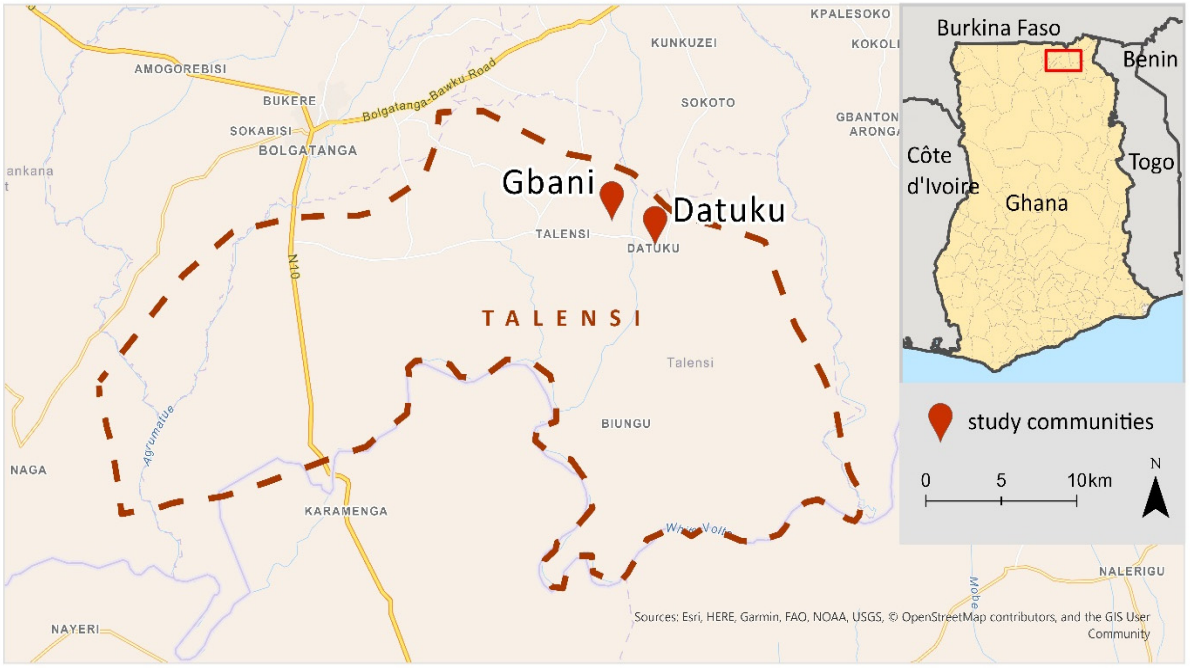

Figure 2. Location of study communities in the administrative map of *Talensi*. The population of *Datuku* is 1974 and of *Gbani* is 2833. Encroaching desertification, prolonged drought, and land resource conflicts are the main problems of the communities [28].

The *Talensi* case in the Upper East Region is a so-called acephalous customary system, which in recent years came to be characterized by competing claims of authority by customary chiefs and *tindana* (earth priests) over customary land management functions. The imposition of customary chiefs in *Talensi* during the era of the British colonial administration, which continues today under the guise of the contemporary independent African state, has created tension between customary chiefs and others [29,30]. Such a struggle for authority over customary land is exacerbated with the increasing importance of ASM in the area, making the case uniquely complex and interesting for understanding dynamics of NRM at the local levels. In contrast, *Dokrupe* and *Tinga* in *Bole* present a case of a well-structured customary land management system where a significant share of the existing mining activities takes place on an ASM basis with less tension and conflict over the decentralized system of NRM at the local level [4]. Unlike the *Talensi* where high intracommunity conflicts and tension engulf the communities constituting our chosen cases (i.e., *Datuku* and *Gbani*), the selected communities in the *Bole* case are peaceful. This makes it interesting for a detailed comparative analysis.

3.3. Methods

We carried out our data collection from February to May 2019 and November 2020 to February 2021. We commenced data collection at the national level, then moved downwardly to regional, district, and community levels. Unlike quantitative research where the selection of respondents is based on the representation of the population, we carefully identified and selected our respondents from each of the levels based on their unique knowledge of our research questions [31]. Our data was drawn from a variety of sources founded on a mixed-method approach widely used in social anthropology and human geography [17]. At the national level, we held expert interviews with six senior government authorities at the "Ministry of Lands and Natural Resource (MLNR)", the "Geological Survey Authority (GSA)", the MC, and the PMMC in Accra. This yielded data on the history of mineral resource governance, evolution, and rationale of formalization, evolving institutional arrangements, and practices and challenges of regulations and access to small-scale gold licenses. In addition, the first author participated in a national conference on

ASM in Accra on 14–15 May 2019 that brought together development practitioners and government officials at different levels. This exposure provided opportunities for informal conversation and participant observations of policy implementation and local debates on Ghana's ASM policy and regulatory regime with a focus on gold over a longer time span. At the regional level, we interviewed six senior officers at the LC, the *Wa* and *Bolgatanga* MC, and the EPA, which yielded data on changes in land tenure, surface land governance, ground rents, access to compensation, and access to environmental and social permits.

In *Bole*, we conducted interviews with the "District Chief Executive (DEC)", five administrative heads of the "District Assembly (DA)", the Department of Agriculture (DoA), the "Community Water and Sanitation Agency (CWSA)", and the CLS and ASM associations for different perspectives on decentralized NRM and local resource users' compliance with national environmental laws and local bylaws. In *Dokrupe* and *Tinga*, the selection of respondents typically proceeded based on "snowball sampling", which taps local contacts and existing respondents to identify other respondents [4]. Data collection from this category of respondents drew on insights from the life-course methodology, which uses subjective life accounts as an analytical entry point to understand broader processes of political and institutional change [32]. Thus, we held semistructured interviews with two local chiefs, two gold committees, four community leaders, two assembly members, and eight unlicensed local resource users. This generated narratives of claims of above- and underground resources, license and permit acquisition, and gold trade and sustainability issues, including miners' rights, community welfare, use of natural resources, emissions and land reclamation, and firm governance. Additionally, questionnaires were administered to 50 household heads separately for settlers and Indigenes by trained enumerators, which gathered data on the impact of ASM on household members. We conducted "focus group discussions (FGD)" separately for settlers, Indigenes, and youth. The FGD gathered a total of 55 participants comprised of people either engaged in or directly affected by ASM. The FGD provided details about the practices, perceptions, and pitfalls in the implementation of ASM licensing, access to surface land rights and concession, and local counterclaims and the construction of resistance identities. Finally, we visited two streams, two mining and processing sites, and two unlicensed gold trading shops to observe daily human interactions, actions, and behavior in relation to the physical environment and material objects.

In *Talensi*, we interviewed the DCE, four administrative heads of the DA, the DoA, the CWSA, and the ASM association. We held semistructured interviews with two local chiefs, four landowners, two assembly members, and eight unlicensed and three licensed local resource users (including one representative from "Shaanxi Mining (GH) Company Ltd. (SMCL)") and conducted biographic interviews with mine workers. Furthermore, FGDs were held with eight members of the "Movement of *Gbani* People for Justice (MGPJ)", seven members of the union of *tindana*, and community members. Key insights were also gained through attending two community meetings with villagers, MMDAs authorities, and development workers. Causal interactions with key stakeholders in these meetings also informed the arguments and analysis in this paper. Trained data enumerators administered questionnaires to 50 household heads. We visited one stream, two licensed and unlicensed mining and processing sites, and two licensed gold trading shops.

3.4. Data Process, Analysis, and Presentation

Data gathered from expert interviews, semistructured interviews, biographic interviews, FGD, and observation were recorded in field diaries and notes. We organized and coded the data according to recurring themes and key concepts, such as power, participation, and sustainability of mine operations, to make our analysis. We reclassified sustainability issues into social, economic, and environmental dimensions. We then presented our respondents' narratives, life stories, and interpretation. In this paper, generalizations are mainly based on informed assessments and perceptions of our respondents, rather

than on quantitative analysis. In the following section, we outline the contexts of the two case studies.

4. Case Study: Decentralized Mineral Resource Governance

In both the *Bole* and *Talensi* case studies, we describe governance changes from the colonial to the postcolonial era, including programs to centralize, democratize, and decentralize NRM and economic and land reform policies with far-reaching effects.

4.1. Community Mining Program in Bole

Historically, the Indigenous peasant communities were granted rights to land and water through agrarian reforms beginning in 1962. This led to the production of food and cash crops for subsistence and income. Households watered livestock and crops from village streams. However, the benefits of the rights began to be divested through relentless processes of environmental deterioration due to informal ASM. Mining activities and related environmental degradation have waxed and waned since the early twentieth century but have increased significantly during the past decade, with a rise in the price of gold [9].

The colonial administration granted mining concessions to six European mining firms [20]. Social and environmental concerns were key to the functioning of mines. Therefore, formal rules were instituted by Regional and District Commissioners to ensure the safety of the environment and of the people living around mining areas. District Commissioners had the right to revoke prospecting activities if such would affect livelihoods and bodies of water [20]. By the time of Ghana's independence in 1957, almost all European mining firms had ceased mining operations in Northern Ghana and paved the way for the involvement of artisanal miners.

Currently, there are over 20,000 people from relative low-income groups who derive their means of livelihoods, income, and employment from informal ASM [20]. This is due to the negative effects of the implementation of the SAP. Act 703 clearly states that artisanal and small-scale mining is reserved for Ghanaians. Yet, a very notable phenomenon has occurred in the past decade with the high participation of foreign miners in informal ASM. Recognizing that informal ASM provides employment, income, and livelihood to most of the rural poor population, the national government launched a community mining program (i.e., semilegal mining), which focuses on protecting the environment and livelihoods of local communities.

4.2. Artisanal and Small-Scale Mining in Talensi

When a gold ore deposit was discovered and exploited by residents in 1994, miners negotiated directly with customary authorities, bypassing the MC to grant permits. To wit, all underground mineral resources are vested in the President in trust for Ghanaians, while allodial rights over surface land rests in the hands of customary authorities [33]. Subsequently, the MC declared that artisanal and small-scale miners must hold a mining license and apply for concession. The wisdom is that the formal institution and the plainly demarcated concession rights define a right to exclude third parties, which is necessary to promote the efficient use of resources to achieve sustainability [11,17].

In this context, a Chinese SMCL was registered in 2008 to provide *mine support services* to registered small-scale miners. Due to its strong political and financial influence, SMCL abandoned its initial mine support services to undertake large-scale underground gold mining by acquiring both the concessions of *Purbotabaa* and *Yenyeya* [21]. The company uses discourses of providing a good mining model for small-scale miners to emulate; of wage labor for impoverished residents whose agricultural yields face a decline due to encroaching desertification, prolonged drought, and lack of subsidies on agricultural inputs; and of avoiding the wastage of gold resource in tailings.

In 2011, SMCL acquired the lease rights of 747.41 acres of customary land from the *Gbani* chief [21]. *Gbani* is inhabited by four clans who used the former land for pastures

together with pastoralists from *Datuku* under a common property regime. SMCL was interested in the land for building an office complex, staff bungalows, and a processing plant and only contacted the *Gbani* chief to acquire the land. Neither *tindanas* nor clan or family heads were included in the negotiation concerning the land leased for 50 years to SMCL. Geological maps from the GSA and SMCL corroborate that the land had been enclosed, which constrained access to several CPR indispensable for local livelihood and shifting cultivation. Police personnel drawn from the district and regional levels keep the land under surveillance. As such, marginalized people lost the use of the commons for cash generation, and their ability to be resilient in times of food insecurity has been reduced dramatically [17]. Instead, only 350 residents were employed by SMCL, which is often referenced as compensation for their loss of access to the forgone CPR [21].

At the same time, the Ghanaian government's adoption of CRAFT, which makes it possible for ASM producers to participate in international gold markets under the guise of responsible mining practice, gave new lease of life to ASM in mining communities across the country, including *Talensi* and *Bole*. Indeed, many gold buyers in the global north and environmental campaigners associate countries and gold producers who adopt CRAFT with practicing responsible mining. The Ghanaian government embraced CRAFT alongside the intensification of mining concessions. In this context, transnational mining concessions are facilitated by the government of Ghana's concurrent implementation of policies to use national resources to fuel socioeconomic development and to encourage foreign direct investment. Coupled with the wider phenomenon of transnational enclosure motivated by the Chinese international development policy encouraging overseas investments, trade, and migration, Chinese investment into mining in Ghana has increased rapidly since the 2000s [34].

However, the intensification of mining has been far from tranquil as locals and miners are in constant conflict due to grievances and livelihood dispossession, compelling vulnerable and marginalized groups to shift to marginal lands. These put to test the extent to which the Ghanaian decentralized system of NRM and its politics of policy implementation alongside the embrace of CRAFT play out in attaining their sustainability goal in ASM at the local level. In the following section, we present, in a comparative manner, the practical modalities involved in implementing a decentralized NRM policy at the local level for both *Bole* and *Talensi*.

5. Results—The Politics of Policy Implementation

5.1. Actors Repositioning Strategies in Decentralized NRM after 2006

Table 1 presents data obtained from various qualitative methods supplemented by intensive policy documents and a literature review. We explain how actors use different instruments to shift positions in decentralized NRM by identifying the differences, but also similarities, between *Bole* and *Talensi*. In summary, the results show that informal actors are slowly adjusting their strategies to local institutional realities by identifying key local actors/elites who can help tilt the institutional balance in their favor to practice informal ASM activities under the guise of fulfilling responsible mining practices.

Table 1. National and local actors repositioning strategies.

Actors	Results of *Bole*	Results of *Talensi*
The MC	The national government instituted a licensing regime in 2006 and a community mining program in 2019 based on a patrimonial structure. The logic behind the interventions is to reduce negative environmental impacts, stop gold smuggling, and enable the state to generate the necessary revenue through processing mineral rights, mining licenses, leases, and royalties. However, access to both licenses and participation in the community mining program can be described as dependent on political and financial capital. However, the district MC was yet to be established to compile a register of small-scale miners, form a small-scale miners' association, and provide extension services. Supervision and monitoring of mining is done by the national MC and the *Wa* MC.	Though the MC is not a present or visible actor at the local level, miners are required to hold licenses to operate. The MC formed an interministerial taskforce that bypassed the existing district and regional security council to stop informal miners. The MC reactivated Act 490 and CRAFT where it requested miners to comply with all relevant local legislations and international best practices. Technically, under Act 490, miners were required to submit environmental and social impact assessment reports to the MC before a mining license was awarded. Though Act 490 has existed since 1994, it was only recently that the MC began to demand miners to adopt CRAFT and submit reports of prior and postmine activities, including safety protocols, mine closures, and land reclamation strategies.
The MMDAs	PNDCL 207 established the MMDAs as a subordinate of the state to *grant or reject applications for mineral rights* for large concessions. The district formed a committee to monitor if informal ASM has met challenges. However, central government authorities are unwilling to implement a devolution of power that will permit the assembly to enforce environmental laws and to clean up the environmental mess in their territorial jurisdiction because national authorities find opportunities to earn money from the status quo. Regrettably, in 2017, the national taskforce bypassed the assembly to combat informal ASM in *Tinga* without conferring with them. The assembly receives nothing from miners because they evade tax on the basis that it is impropriate to tax an illegal business activity. Paying tax to the assembly will suggest that the assembly endorses their operations (Planner in *Bole*, Interview, 19.03.19).	Following the free and prior informed consent principle, the assembly has received, assessed, and approved mineral rights for a few local and foreign firms (Coordinating director in *Talensi*, Expert interview, 23.05.19). Usually, the assembly organizes community durbars to inform local citizens as well as publish mineral rights applications in public places for two weeks to allow local citizens to present petitions against applications (if any). In the absence of dissatisfaction, the assembly grants mineral rights and then collects royalties and fees from building and business operation permits. It irregularly supervises miners and thus paves the ways for SMCL to underdeclare output levels for the collection of accurate amounts of tax payments (ibid). The collection and distribution of tax revenue from SMCL and other registered mining companies is not transparent and there are long delays in accessing it from the national level (ibid).
Customary authorities	Chiefs activated the land administration project, which grants them the power of attorney to allocate surface land rights to end users through the CLS [35]. Chiefs find other ways to increase their interest in subterranean resources by shopping for a forum to reopen old mine shafts. Faced with a high demand for lease rights to mine, chiefs reclaim common land granted to settlers in *Dokrupe* and *Tinga* in the 1940s to make private profits for themselves and family members. The empirical results indicate that chiefs have never rejected informal ASM activities even if the communities will bear the brunt of undesirable effects as long as it will result in a regular flow of royalties to their coffers (Official of CLS in *Bole*, Expert interview, 19.03.19).	Chiefs consolidate their position by referring to the Stool Lands Administration Act 1994. The *tindanas* formed a union to better stand up to the chiefs who are well represented in local government agencies to cosign leases [30]. Drawing on natural resource entitlements, the *tindanas* argued that they will not sit idly while gold resources are taken by miners and their collaborators—chiefs. "No one can issue a mining license to someone without letting *tindanas* who are custodians of the land know about it" (*Tindana* in *Gbani,* FGD, 18.05.19). *Tindanas* have often been narrowed in mineral rights administration resulting in conflicts between themselves and chiefs, on the one hand, and between themselves and concession holders, on the other hand.
Non-concession holders	The weakness of the assembly and the absence of the MC in the communities provide opportunities for informal miners to scramble for gold ore without a license and concessions contributing to environmental degradation. Many informal miners expressed a willingness to operate within the government's legal framework, but they were discouraged by the distribution of licenses to political party supporters by the Minister of Lands and Natural Resources at the expense of local miners who have no political influence (Secretary of ASM in *Bole*, 20.03.19). Additionally, the excessive cost (USD ~2400, including state approved and unapproved fees), red-tapism, and delays (10–18 months) have demotivated them to access mining licenses (Miner in *Tinga*, FGD, 04.12.20).	There is an unequal power relation between concession and nonconcession holders resulting in conflict. Informal miners have a weak position in the district gold resources. They derive gold ore from the concession of others based on Indigeneity: "who was here first". The assumption is that access to gold on their homeland is essentially a traditional right with or without title and that this right serves as the only means to generate income for sustenance [28,33]. An informant told us that some family heads, including his dad, were involved in selling unused family land to informal miners for instant cash (Youth leader in *Datuku*, FGD, 24.05.19). They do not pay ground rent to the LC and dodge paying fees to customary authorities for land reclamation. Miners think the assembly is responsible for reclaiming land.
Concession holders	None	Concession holders use Act 703 to legitimize claims on gold and power to prohibit informal miners from operating on acquired concessions. They use modern mining machines and other innovations intensifying the scale and efficiency of gold ore extraction of large areas of land incredibly. License holders bypass the local government to deal directly with the MC and sell gold outside the community. Some local concession holders either sublease or develop strategic partnerships with foreign miners for a monthly salary. SMCL's operations have generated local conflicts. License holders do not cooperate with traditional structures and organizations for land reclamation activities.

Source: Qualitative methods, intensive policy documents and literature review.

The Politics of National Policy Implementation

In Ghana, the MMDAs and local communities had high expectations for the establishment of a district-level MC to provide doorstep services. Nevertheless, this process was challenged by the central government's inventive use of neoliberal resource governance to reinforce tendencies associated with neopatrimonial political culture to undertake a series of complex fiscal and administrative interventions that aim to disempower the MMDAs. In the context of ASM, the state implemented a selective decentralization reform and

concurrently enacted Act 703 where the authority to administer and dispose of mineral resources wealth is now taken over by the Minister of Lands and Natural Resources and is administered by the MC. Act 703 provides for a clear-cut system of mineral resource governance where the Minister has several mineral tenurial instruments at his/her disposal to issue mining rights. He/she directs the MC to identify ASM areas in the district and to perform the technical and commercial evaluation of the area. Thereafter, he/she directs ASM operators to make claims to the mineral resource wealth area by obtaining a small-scale license from him/her (Act 703, Section 82(1)). It seems that the centralized control over mineral resource wealth in the national government stimulated interest among foreign mining companies, leading to a dramatic increase in mining applications in the last decade.

As such, the Minister takes advantage of his public position for political-economic considerations by relegating the MMDAs, which are mandated to implement national government policies including law enforcement. In 2017, the Minister instituted a moratorium on ASM for two consecutive years on the backdrop of national media environmental conservation discourse. Subsequently, a national taskforce—militarized enforcement initiative—was established to enforce the moratorium. The taskforce entered the MMDAs territories and undertook operations, including bribe collection from ASM gold producers, and allowed some of them to mine (President of ASM association in Accra, Interview 15.05.19). For instance, the SMCL in *Gbani* could mine despite its informality [36], while locals were disenfranchised and their mining assets destroyed [21]. Since October 2017, local miners have lobbied the Ghanaian President through the Council of State and National House of Chiefs to lift the moratorium because of the loss of employment, income, and livelihoods (President of ASM association in Accra, Interview 15.05.19).

Then, a few months before the December 2020 general elections, the Minister lifted the ban, vetted ~900 miners, and recommenced the issuance of mining licenses, of which more party *foot soldiers* (i.e., political party supporters) were granted a license to start immediate mining (ibid). This corrupt practice is commonly associated with political parties that are in power in Sub-Saharan African countries, where the Minister enjoys tremendous power and the possibility to push his political agenda. With an eye on upcoming general elections, the Minister will disburse state funded contracts or, in this instance, access to mineral resource wealth to his political supporters from national to local levels in return for votes [21,37].

The privileging of *foot soldiers* and commercial interests (e.g., SMCL) over state regulations contributed to a culture that has encouraged and reinforced rent-seeking by public officials, especially through a tolerance of unlawful practices. This act of contempt and disenfranchisement incensed MMDAs authorities to permit informal ASM activities that are not subject to the existing legal framework by relaxing their monitoring and supervision roles, resulting in a free-for-all looting of Ghana's valuable natural resources, with attendant large-scale environmental degradation [21] (Planning officer in *Bole*, Expert interview, 18.01.21).

5.2. Impact of ASM Formalization and CRAFT

In this section, we demonstrate that gold ore mining practices and a succession of mining ordinances enacted by colonial, Ghanaian state authorities and recently by international agencies have had direct consequences for local communities. We evaluated the perceived impact of CRAFT by assessing its adoption by the state actors at the organizational level and its implementation in practice (see also Section 5.1), including resource use (water and wood fuel), mine waste, contamination in nearby bodies of water and soil, noise nuisance, the closure and reclamation of exhausted mine lands, and social bonds.

5.2.1. Results of Bole

1. Environmental Impact

The results indicate that the recently introduced community mining program in *Tinga* improved nothing. The widespread scars of explosives on the land surface include

opened pits, deforestation, encroaching desertification, and the dramatic transformation of stream and hand-dug wells. Local elites, such as the gold committees, do not enforce land reclamation after mining the gold ore from the soil because their livelihoods do not depend on farming or livestock keeping. Field observation results show that the streams receive a greater load of mine sediment and contamination of hazardous chemicals, sewage, and solid waste from adjacent mining sites. In *Tinga,* an elevated level of mercury in the water is above that of the recommended World Health Organization for potable drinking water [38]. We unexpectedly met children in the stream busily washing tailings for gold dust without being sanctioned (*Tinga*, Field observation, 28.03.19). These children mine probably because they see the opportunities CRAFT grants to ASM gold producers to mine and sell the gold across the border.

Residents said that the stream is rendered unsuitable for both animal watering and domestic use. We are informed that in the raining season (May–September), the swollen stream deposits toxic silt immediately next to the bank, which contributes to rendering the floodplain unproductive for dry season gardening. They informed us that 37 houses with an estimated 343 people were forced to move uphill away from the stream edge to the senior high school's land in search of more fertile land for gardening (Peasant farmer in *Tinga*, FGD, 12.12.20). In *Dokrupe,* heavy vehicles used for carrying gold bearing rocks from mine sites to the community center caused damage to the bridge contributing to a broadened floodplain and sandbars in the stream. In 2018 and 2019, the community was inundated and enveloped with plastic debris and sediment that floated downstream from the mine. We saw that the vast floodplain surprisingly looks infertile and native grass species are stunted and look scorched [9].

2. Economic Impact

Semistructured interviews and FGD results show that a majority of the respondents perceive informal ASM as a major income source, which increases their capacity to establish new local businesses and pay school and health fees of household members. However, the scale of environmental degradation arising from informal ASM has affected the aquatic ecosystem and worsened agricultural production for people whose livelihood does not depend on mining. In the past decade, locals catch low fish and do not obtain eggs from endangered crocodile species for subsistence and income (Peasant farmer in *Tinga*, FGD, 12.12.20). Additionally, the presence of heavy metals in the streams increases the costs of water treatment for locals. Household wells nearby the stream and mining sites are contaminated due to discharge from mine sites. The results indicate that 84% (21 of 25 household questionnaires) reported not having access to potable water from within. The onerous task is that women and children from poor households trek far to fetch water for domestic use. The results further show that 16% (4 of 25 household questionnaires) buy bottled and bagged water for household daily needs. Therefore, there are losers as well as winners. The oldest man growing up with his parents since 1943 narrated that:

> "*Dokrupe* was the leading producer of cassava, maize and cotton in the district between the 1960s and early 1990s. People hunted game next to their homes and harvested adequate fish in the stream for subsistence. Surpluses were exchanged for other grains and clothes. Presently, there is a food shortage in *Dokrupe*! Vegetables are brought in from Techiman and Kumasi at inflated prices. A few rich households whose members practice informal ASM can afford to buy food for subsistence, while the overwhelmingly poor households struggling to buy food. The mode of production and exchange has changed, and everything now is expensive. Informal ASM is a slow but sure killer!" (Community leader/*Imam* in *Dokrupe*, Interview, 23.01.21).

The ability of miners to be resilient during the COVID-19 pandemic was reduced as many women and children who worked as cooks, transporters, and crushers lost employment and generated no cash to buy food for consumption during the lockdown

(March–September 2020) (Widow in *Dokrupe*, FGD, 22.01.21). Those who had money could not buy food locally because farmlands had been converted into mining.

3. Social Impact

The results indicate that informal ASM is attracting immigrants from far and near, which contributes to social bonds through intermarriages and cultural exchanges. The results also indicate that informal ASM has, however, claimed the lives of 7 boys, 3 girls, and over 18 cattle in the past decade (Peasant farmers in *Tinga*, FGD, 12.12.20). "Informal ASM has wasted precious life! Many lives are being wasted and many more lives would be wasted later because some people think they must make money by hook or crook" (A reverend minister in *Tinga*, FGD, 12.12.20). At the Community-Based Health Planning and Service in *Dokrupe*, four injured miners were brought in for medical reviews due to underground mining accidents which occurred on 18 October 2020. One amputated miner told us that he kept his right hand inside a *changfa* leading to it being slashed. The lack of safety measures in informal ASM is threatening lives.

Many boys and girls have dropped out from school to work in informal ASM and sometimes bring home gold-impregnated mercury putty to burn on cooking stoves in open spaces and expose household members to health risks (Woman in *Dokrupe*, Interview 17.01.21). Some girls at mining sites earn additional income by practicing prostitution, resulting in unplanned pregnancies and sexually transmitted diseases (ibid). Residents fear that their boys and girls are likely to have low production and reproductive capacities in their thirties and will become a burden to the community.

5.2.2. Results of Talensi

1. Environmental Impact

Except for a few cases, concession holders have caused less direct environmental degradation due to regular monitoring and inspection carried out by the MC. Expert interviews and FGD results show that SMCL mining practices contradict Ghanaian mining and environmental laws. Residents informed us that SMCL's underground mine blasting had caused structural damage to a basic school building in *Gbani.* It creates a noise nuisance, and its waste is spotted on the school landscape, which is later deposited directly to the sediment load of the stream, leading to an increase in the braiding and erosion of the stream's bank. Additionally, we observed in field and on drone images high degrees of open pits in *Datuku* and *Gbani*. The consequences conspire to dispossess residents of potable drinking water due to the presence of arsenic, cadmium, and nitrate. In the past, the land immediately next to the stream was the most productive, yielding 21 bags of maize per acre for peasants, but now it supports no plant or animal life (Peasant farmers in *Gbani*, FGD, 12.02.21). Presently, Indigenous people make claims to the best lands and build plots for themselves, while the less desirable land closest to the stream is reserved for poor settlers [9]. Residents also informed us that children and livestock frequently fall inside abandoned pits and die, if unnoticed early (Community leader in *Datuku*, 08.02.21).

2. Economic impact

The results indicate an increase in cash generation for residents and immigrants involved in ASM, which has contributed significantly to household upkeep when there is low agricultural yield. The results also indicate that locals employed in SMCL experience sustainable cash inflows, which enables them to escape poverty, improve the standard of living of household dependents, and obtain decent accommodations. The increase in people's purchasing power influenced the creation of microcredit companies in *Gbani*, which render savings and investment products for locals and immigrants, which hitherto did not exist. Nonetheless, the economic difficulties for those who do not share in the gold boom contradict the direct positive side of ASM.

In *Gbani*, large tracks of land used for farming have been converted into mining. These farmlands and economic resources are no longer available for residents, making it more and more difficult for them to cover their subsistence needs. As such, they are

forced to switch to more marginal land and floodplains. Regrettably, the productivity of marginal land close to mining sites is very low due to emissions from processing plants. Locally produced vegetables and cereals are reduced, with people now more dependent on buying food stuff from the regional market in *Bolgatanga* and *Navrongo* (Extensionist of DoA, *Tongo*, Interview, 15.02.21). Vulnerable and marginalized women, children, and physically challenged persons do not have money to buy food stuff at the local and regional markets. This is heightened by the loss of economic trees, including *shea* and *dawadawa,* which used to provide them with fruits and nuts for cash income.

Additionally, because CRAFT enables ASM gold producers to sell gold on the international market, miners now bypass the PMMC. This leads to unaccounted ASM gold produced in the country evading tax and reducing jobs for local licensed gold buyers. We also gathered that majority of people working in informal ASM who lack formal education pay huge sums of money to local consultants to help them produce "fake" reports to present to gold buyers upon request in international markets. Most of the reviewed reports are at variance with the reality on the ground because of the ineffective auditing of reports locally.

3. Social Impact

The study results indicate that the differential distribution in money causes problems, including behavioral indiscipline in schools. The FGD results show high rates of dropout and absenteeism and poor academic performance of pupils in *Datuku* and *Gbani* compared to nonmining communities (Retired teacher in *Datuku*, FGD, 16.02.21). Usually, pupils (12–17 years) who participate in informal ASM show disrespect to their teachers and community elders who attempt to prohibit them from working in informal ASM. The additional money pupils make is often spent on attending weddings, parties, and casinos, thus resulting in less time to stay home to do homework exercises/assignments (ibid). The advantage of boys going down narrow tunnels to collect gold ore endows them with a powerful role in informal ASM, while girls and women transport the ore to crush for milling. However, they face harsh working conditions, lack job security and safety materials, abuse drugs (e.g., tramadol, marijuana, alcohol) to work harder, and face threats and intimidation from their employers (15-year pupil in *Gbani*, Biographic interview, 05.02.21). This arises due to a lack of contractual agreements and lack of collective efforts to unionize labor, which has contributed to tension between mine workers and owners.

5.3. Local Responses to Informal ASM at the Local Level

In this section, we present local responses from the wider community, including resource managers, mine workers, and owners who are directly involved and others who are either indirectly or not involved in informal ASM. We categorized the local responses by local actors who perceive gains and local actors who perceive losses.

5.3.1. Results of Bole

1. Local Responses by Local Actors Who Perceive Gain in Informal ASM

The empirical results show that the economic benefits to the wider community and powerful actors, including chiefs, gold committees, and mine workers, strongly support the district mining economy as desirable. In *Tinga*, 92% indicate that at least one family member—a son or daughter—was involved in informal ASM. A young male miner narrated that:

> "authorities do not question the source of people's wealth! Why will people waste time and money to go to school to learn how to speak big English but have no job and money. Informal ASM gives people more money compared to so-called crop farming and animal rearing. He has made some money to marry, build guesthouse, buy private and commercial vehicles, operate casinos within and outside the community. He makes cash donations to churches, community

committees and political parties, which earns respect for him, but for informal ASM" (Miner in *Tinga*, FGD, 16.01.21).

Indeed, along the main street in *Tinga*, there are clustered businesses (restaurants, casinos, groceries, and fuel stations). The organic growth of most of the businesses can be matched to incomes from informal ASM. In *Dokrupe*, the gold committee and customary authorities developed inventive strategies to extract rents from ASM, including the mediation in disputes between themselves (landowners) and miners; the issuance of business permits to owners of processing facilities on their soil, mounting checkpoints for donation collection (one third of the amount of gold-bearing rocks extracted); and the collection of environmental user fees for land reclamation. They also tolerated mining leading to the reactivation of the *mbowura* (warrior cult of the *Gonja* people) and spiritualists (marabouts) to provide essential services for miners. The *mbowuras* are fortified to wield guns and ammunition to escort miners from the community to the mine and back. The spiritualists are consulted by miners to help them catch the gold spirit quickly so that they will gather an abundant harvest to return home richer than they left. The gold committee collects 1% of the value of gold mined by individuals or groups as a reward for the relevant spiritualist (Chairman of gold committee in *Dokrupe*, FGD, 21.01.21). The community undertook self-help funded projects, including road regraveling and bridge and borehole construction, and lobbied for the installation of electricity and telecommunication networks to enable mining to thrive.

2. Local Responses by Local Actors Who Perceive Loss in Informal ASM

The negative social, economic, and environmental impact of informal ASM has forced 60% of household heads whose livelihoods do not depend on mining to fear loss of access to CPR often without restitution. Thereby, at least one person migrates temporarily to work elsewhere during the off-farming season. A 43-year-old cashew farmer reported that:

> "the presence of mineral wealth contributes to cash crops productivity. Where cashew crops grow well, miners go to negotiate with the gold committee for such lands to mine for gold ore and pyrites. His entire 6 acres cashew farm was destroyed in less than a week without reparation. He is preparing for vengeance and no longer attends community meetings and makes no monetary contribution toward community projects either. He depends on handout from the member of parliament for *Bole* and sometimes goes to farm in Ejura for cash income" (Cashew farmer in *Tinga*, Biographic interview, 14.04.19).

While this narrative seems to invoke a potential intracommunity conflict, it could be interpreted as an expression of disappointment and boldness against the injustice of state policies instead of a course of action [39]. However, most of the losers are the powerless and marginalized who cannot self-organize themselves to react uniformly. Residents who migrate out temporarily or permanently send remittance to those left behind. However, mining alone does not account for emigration, but also marriage, education, and employment opportunities.

5.3.2. Results of Talensi

1. Local Responses by Local Actors Who Perceive Gain in Informal ASM

Some locals considered mining as a complementary livelihood strategy to agriculture. Hitherto, agriculture offered significant employment and income for most people in northern Ghana. However, the adoption of SAP led to the downfall of certain agricultural activities due to the withdrawal of subsidies on agricultural inputs, including fertilizer, insecticide, and pesticides. Since then, locals view agriculture as unprofitable, leading to agricultural labor switching to wage labor in mining as one option of contributing to families' household income. Additionally, some retrenched and redeployed staff and school leavers find solace in obtaining income from mining to start new businesses and further their education, respectively. Thus, local elites redistribute land in favor of mining investors.

2. Local Responses by Local Actors Who Perceive Loss in informal ASM

The results indicate that the unilateral granting of lease rights to SMCL and informal miners without involvement of key local stakeholders has fostered gossip and dissatisfaction among locals. As such, the MGPJ, *tindanas*, and urban base elites of the communities organized around the trope of Indigeneity and forged a collective resistance identity to strengthen their claims of a recovery of possession. They also relied on the vernacular, referred to as the Indigenous narrative, combined with various forms of resistance tactics, including deputations to state officials at the local, regional, and national levels, to contest the land rights claim of the *Gbani* chief and SMCL.

The groups held both violent and nonviolent demonstrations on the streets of *Gbani* and *Tongo* with threatening and dissatisfaction inscriptions on banners and placards against SMCL's unsustainable mining practices. Locals blew up one of SMCL's industrial machines and caused harm to Chinese workers, resulting in the arrest of 12 locals. Subsequently, the group sued SMCL at the High Court for recovery of possession, indemnity, and land reclamation (President of MGPJ in *Gbani*, Interview, 20.02.21). The group has urged the EPA to hold onto granting SMCL an environmental permit until the court grants its verdict. SMCL through its barristers and solicitors had entered an appearance before the High Court. Out of fear of being sanctioned by international certification agencies due to the massive local and national media campaign war against the SMCL over its known mining grievances, the top managers of SMCL adopted the new name Earl International Group (GH) Limited to rebrand its mining activities. The *tindanas* have also challenged the *Gbani* chief to reverse the land leased to SMCL based on the narrative that:

> "the position of chiefs in the Upper East region and *Talensi* in particular, was just a creation of the colonial administration for easy administration for the colonial British regime. The *tindana* institution dates to the precolonial era and before the advent of any chieftaincy institution. Thus, chiefs ought to know that land belongs to clans and families with the *tindana* having the oversight responsibility of such lands and not chiefs" (A *tindana* in *Gbani*, FGD, 21.02.21).

Table 2 presents the summary of the results for easy comparative analysis and discussion.

Table 2. Summary of comparative results.

Main Issues	Results of *Bole*	Results of *Talensi*
Institutional ambiguities	➢ Different actors make claims to mineral resource wealth ➢ No mining license and concession granted to local miners ➢ The district security council is bypassed by national taskforce to combat informal ASM without conferring with them ➢ Weak supervision and monitoring of informal ASM	➢ Conflict between local population and newcomers ➢ Conflict between informal miners and concession holders ➢ Conflict between customary chiefs and *tindanas* over informal ASM management and royalty rights ➢ The district assembly is bypassed by regional security council to provide land surveillance for SMCL
Environmental Impact	➢ Local actors do not enforce land reclamation after mining ➢ More open pits ➢ Water dispossession ➢ Reduce fish and crocodile	➢ Unnecessary noise pollution ➢ Mine sediments litter school compound and community lands ➢ Many uncovered/open pits ➢ Land dispossession

Table 2. *Cont.*

Main Issues	Results of *Bole*	Results of *Talensi*
Social Impact	Positive ➢ Increase social bonds through intermarriages and cultural exchanges Negative ➢ More mine-related deaths ➢ Pupils drop out from school ➢ Lack of job security ➢ Lack of safety measures in mines	Positive ➢ Participation is social activities including wedding, naming ceremonies, etc. Negative ➢ Behavioral indiscipline in schools ➢ High rates of school dropout ➢ Lack of social security ➢ Threats and intimidation from employers ➢ Harsh working conditions
Economic Impact	Positive ➢ Increase income for households engage in informal ASM ➢ Development of decent accommodation Negative ➢ Increase cost of water treatment for CSWA and households	Positive ➢ Increase in cash generation ➢ Springing of new local businesses ➢ Existence of microcredit company Negative ➢ Not everyone shares in gold boom ➢ Buy food stuff from regional market
Winners and losers	Winners: Customary chiefs, gold committee, mine workers, and their families Losers: Small-scale farmers, wider community, district assembly, and the state	Winners: Customary chiefs, concession holders, SMCL, mine workers, and their families Losers: Small-scale farmers, *tindanas*, wider community, district assembly, and the state

6. Discussion: Sustainability Challenges

In this section, we go back to our working hypotheses (see Section 2.5) to discuss them, keeping in mind the comparative results of the two case studies. As a first step, we recall that our H1 states that decentralization in NRM will lead to positive social and environmental outcomes. The proponents of decentralization hold the assumption that local enfranchisement in NRM will lead to an improvement in social and environmental standards, which will maintain crucial ecological functions and simultaneously safeguard essential livelihoods and the economic values of resources. Any positive outcome of decentralization is largely dependent on the distribution of power, a set of management rules attributed to the concerned resource, equity in benefit sharing, and the performance of downward accountability toward the local population [22].

Our empirical case study results do not coexist with the optimistic expectation of decentralization (H1). The expected outcomes of decentralization in NRM are seldom realized because democratic decentralization is hardly implemented [1,2,23]. In both *Bole* and *Talensi*, poverty levels have not reduced across the different social strata, except for a few, and are exacerbated by the uneven distribution of local mineral resource wealth. Moreover, the results show that under the so-called participatory management arrangement, changes in the rights and powers to manage the resources are skewed in favor of *customary authorities* and the *gold committee* in *Bole*, which partially fulfil the conditions that would enable improved social, economic, and environmental sustainability results in the entrenched "bossism" and social inequality [4]. Similarly, in *Talensi*, the results show that the colonial and postcolonial decentralization efforts, which emboldened *local chiefs* to play a prominent role in the existing institutional arrangement in decentralized NRM and in ASM, is expected to continue in the future. Like concerns raised by critical observers of decentralization in some parts of the world, "this raises important concerns over elite capture of the decentralization process" [4] (p. 450). This confirms our initial suspicion that the null hypothesis cannot fully capture the processes at play. We recall that together with

CRAFT, the decentralization of procedures in ASM leads to actors repositioning strategies, which ultimately has a negative impact on social, economic, and ecological sustainability.

H2 postulates that the following mechanisms contribute to explain the actors' repositioning strategies.

6.1. Central Government Authorities Did not Let Their Responsibilities Go to Local People

In this section, we show how economic factors (e.g., rents, gold price), political factors (e.g., selective decentralization, vote), and bargaining power relations influence national government officials not to let their responsibilities go to local people for them to progressively expand their control over the mining sector, which gradually falls prey to corruption and resource mismanagement. The centralist system of NRM in successive postcolonial governments, which resulted in the enactment of new pieces of legislations, including PNDCL 218 in 1989 and Act 703 in 2006, is influenced by the British colonial administration that lay the foundation for a centralized system, vesting ownership of all mineral resource wealth whether in public or private land to the colonial state [28,33].

Since 2006, attempts by central government authorities seem to roll back local people's participation and control of mineral resource exploitation amidst Act 462. The empirical case study results show that central government authorities implemented selective decentralization on grounds of so-called sustainable management, contrary to observations in other sectors, such as local governance [40], education [41], sustainable urban development [42], and environmental management [43]. In the Ghanaian case of NRM for ASM, selective decentralization only worked in limited sustainable management practices at local levels. MMDAs are not allowed to grant licenses to miners at the local level, and the establishment of a district level MC to perform a critical formalization role at the local level is intentionally delayed, resulting in poor implementation of sustainable mining practices and a poor capacity to monitor detrimental ASM practices. The case study results indicate that central government authorities aim to sustain a neopatrimonial relationship for the extraction of various rents and fees and to reward political party supporters in return for votes.

In *Talensi*, central government officials entreated the district authorities to restrict themselves to signing mineral rights applications and to process the free and prior informed consent of local stakeholders for SMCL to secure a license, concession, and permit to mine in *Gbani* despite its informality [36]. The Minister directed the MC to demarcate ASM areas in *Gbani*, which granted him opportunities to issue licenses to miners inside the demarcated areas. Like the PNDCL 218, Act 703 also turned out to be unsuccessful as an instrument for ASM formalization because very few ASM operations have been approved by the Minister to operate in *Gbani*, while most informal ASM takes place inside the concessions of mining rights holders, often without their official consent, resulting in local conflicts [4]. The selective implementation of decentralization contributes to miners' lack of access to information, leading to nepotism; rent-seeking during the distribution of licenses, leases, or permits; complexity; and the high cost of registration procedures [4,5].

In *Bole*, the central government's bypassing of the assembly to fight against informal ASM in its territory suggests ambiguity regarding rule interpretation (e.g., Act 462 and Act 703) and enforcement. The central government's weak mechanism of stopping informal ASM through a militarized taskforce failed to defuse ASM operation in communities of *Bole* [10]. The disenfranchisement of district authorities in *Bole* and *Talensi*, makes them tolerate informal ASM and disregard SMCL's grievances by relaxing existing regulations and enforcement, leading to resource over exploitation and destruction of cashew farms, bodies of water, and forest reserves. "The assembly relaxes its regulatory responsibilities as revenge for top government officials' disrespect toward local government authorities" (DCE in *Bole*, Interview, 18.01.21).

6.2. Decentralization in NRM Enables Newcomers from Outside the Communities to Gain Access to Local Resources, Leading to Conflicts between Locals and Newcomers

Our *Bole* case study results show that local elites have shown strong support for the mining economy by deflating any direct and indirect measures that might threaten the continued operation of informal ASM due to the monumental income it generates for some actors. The results also indicate that newcomers' land access has led to the territorial displacement of marginal groups and peasants. Yet, local citizens have not formed a collective resistance strategy to challenge their dispossession because of the seemingly incompatible interest of the various groups [9]. Only a few marginalized individuals rebuked royalty-receiving landowners, mining financiers, gold committees, the district assembly, and the state's reluctance to implement effective land reclamation strategies, thus reducing land availability for agricultural activities [4]. This forces disenfranchised local citizens to shift to more marginal land resources far from the community for sustenance, which are then overexploited leading to environmental degradation [12]. As a result, exasperation among locals emerges, resulting in instances of intracommunity conflict between locals and newcomers in *Tinga*.

In *Talensi*, the case study results show that the newcomers' huge rush for customary land for gold ore mining from 2008 onward due to their financial and political capital, which helps them to gain exclusive rights of access often guaranteed by the state, results in vulnerable and disenfranchised people who are on the losing end of the equation, increasingly bereft of meaningful access to CPR [4,11,21]. This leads to colossal local conflicts between resource users and owners, which are usually shaped by Indigeneity [9,34]. Indigenous identities are constructed in response to struggles over resources and can be seen as resistance identities formed as part of a legitimating narrative to assert preferential claims to resources and to resist dispossession [34]. The use of Indigeneity as a basis for territorial claims implies that locals have been exposed to international discourses and are able to articulate their identity in a way that is recognizable and usable by their advocates [34,41]. The case study results show that local responses have yielded some successes: they stopped the SMCL company from operation in unauthorized areas, the damaged school building was repaired, and 47 landowners have been compensated (President of MGPJ in *Gbani*, Interview, 20.01.21). Our case study result supports Gerber and Haller's [17] argument that the bargaining power of local groups and their capacity to self-organize for a collective action depends to a large extent on the perceived benefits and loss of the resource. For example, the perceived losses of ground rents to *tindanas* due to the local chief's bypassing them to grant lease rights have led to the formation of the union of *tindanas* to resist their marginalization by referring to the ancestral domain and constitutions (institution shopping).

6.3. The Neoliberal Nature of CRAFT May Lead to Unwanted Outcomes

Our case study results demonstrate that the way CRAFT works in Ghana leads to an exacerbation of private profits, but this is seen as the necessary price to be paid to gain access to "good" reports from private ecopreneurs, i.e., local consultants. We argue that the mere presentation of a "fake" CRAFT report—due to a lack of verifiable mechanisms in *Bole* and *Talensi*—as proof of responsible mining practice for ASM gold producers to participate in the international market reinforces private ecopreneurs' own benefits and financial returns at the expense of many poor and uneducated ASM gold miners who cannot produce CRAFT reports by themselves. Consequently, private ecopreneurs have started to acknowledge the CRAFT policy measure as a new, safe, and profitable market, which is why they represent the winners of the emerging "CRAFT business". Faced by reduced profit margins, ASM gold producers increase their environmental degradation practice to extract more gold ore that would compensate for any loss arising from payments to local consultants.

Furthermore, the results show that most miners bypass the PMMC to sell in neighboring countries who hardly ever request CRAFT reports. Ultimately, the state, in contrast,

remains excluded from the compromises made by private ecoprenuers, it embodies the loser of the new rules of the game. In particular, the state cannot generate environmental rents to address water pollution and environmental degradation. As is noted here, "if informal ASM is not stopped sooner than later, Ghana could be importing potable drinking water in the next two decades" (Official of CWSA in *Bole* 21.12.20).

7. Conclusions

Our paper has intended to contribute to broader debates on the relationship among decentralization in NRM, the formalization of mining rights, and sustainability. We relied on a combination of political ecology and new institutionalism to direct central attention to the ways in which power and resources are distributed across society. The added value of this analytical approach is its ability to capture both the institutional and practical complexities in the implementation of decentralization in the Ghanaian ASM sector and its effects at the local level, which enables us to produce a set of more context-specific narratives. Our case study results show that Act 462, which aims to decentralize control over mineral resource wealth to the local population, coexists uneasily with the minerals and mining Act 703, which forms the basis for the formalization of mining rights [4]. This causes institutional ambiguities wherein different actors are now making claims to mineral resource wealth, leading to intragovernment conflicts over law interpretation and enforcement, conflicts between locals and newcomers, conflicts between informal miners and concession holders over access to above- and underground mineral resource wealth, and conflicts among customary authorities (chiefs and *tindanas*) seeking to secure ancestral domain rights and the associated royalties.

Despite the conflicts, decentralization has improved a selected few local actors' access to mineral resource wealth and threatened the majority with dispossession, leading to social, economic, and environmental sustainability challenges. We argue that the Ghanaian national government tends to undervalue the threats of sustainable development as a constitutional objective resulting from the selective implementation of decentralization. Since local government actors are disempowered, and the state taskforce cannot be everywhere to monitor and supervise local resource exploiters, environmental degradation continues relentlessly.

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Abbreviations

ASM	Artisanal and Small-Scale Gold Mining
CLS	Customary Land Secretariat
CPR	Common Pool Resources
CRAFT	Code of Risk Mitigation for Artisanal and Small-Scale Miners Engaging in Formal Trade
EPA	Environmental Protection Agency
FGD	Focus Group Discussions
GH	Ghana
GSA	Geological Survey Authority
LC	Lands Commission
MC	Minerals Commission
MGPJ	Movement of *Gbani* People for Justice
MLNR	Ministry of Lands and Natural Resource
MMDAs	Metropolitan, Municipal, District Assemblies
NRM	Natural Resource Management
PMMC	Precious Minerals Marketing Corporation
PNDCL	Provisional National Defence Council Law
SAP	Structural Adjustment Program
SMCL	Shaanxi Mining (GH) Company Limited

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